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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,006	10/26/2000	Hiroki Doi	0717-0448P	3457

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EXAMINER

LAIR, DONALD M

ART UNIT

PAPER NUMBER

2858

DATE MAILED: 04/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/696,006

Applicant(s)

DOI ET AL.

Examiner

Donald M Lair

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14, 15 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 13 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 17, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kalb, Jr. (US-5,760,581).

3. In regards to Claims 1 and 17, Kalb, Jr. discloses an apparatus comprising a plurality of terminals for applying a bias voltage to a plurality of Hall devices that are connected in series (Abstract; Column 3, lines 25 – 35; Column 4, lines 7 – 8; Fig. 4). While the limitation of “... so that a driving current driving at least one Hall device of the plurality of Hall devices is a current adjusted amount of a driving current driving another Hall device through a corresponding terminal of the plurality of terminals.” could be interpreted to describe the constant supplies providing an additional current to each of the Hall devices, as shown in Fig. 1, it could also be easily interpreted to describe the invention of Kalb, Jr. wherein a current adjusted amount could be due to a current drop in the Hall device and the output current then drives the next Hall device.

4. In regards to Claim 19, Kalb, Jr. discloses grounding the series of plurality of Hall devices (Figs. 4 and 6).

*Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 2 – 11, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalb, Jr. in view of Foster (US-4,833,406).

8. Kalb, Jr. discloses an apparatus as applied above that further comprises a constant voltage supply, and applying a bias voltage to each of the Hall-effect sensors (Column 3, lines 25 – 35); however, Kalb Jr. fails to disclose supplying a constant bias voltage to each of the terminals or including a constant voltage supply circuit.

9. Foster discloses applying a constant voltage as a reference voltage to a Hall-effect sensor (Column 4, lines 9 – 13) and a constant voltage supply circuit (Column 3, lines 62 – 66).

10. In regards to Claims 2, 3, and 18, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus disclosed by Kalb, Jr. by

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biasing each of the sensors with the same reference voltage as applied to the first sensor in the series as disclosed by Foster for the purpose of making the output of the sensor vary in relation only to changes in the magnetic field. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the modified invention to include the constant voltage supply circuit disclosed by Foster for the purpose of supplying a constant bias to all of the Hall-sensors in order to make the output of the sensor vary in relation only to changes in the magnetic field.

11. In regards to Claims 4 and 5, Kalb, Jr. does not specifically disclose a constant voltage supply circuit, but this modification would have been obvious as applied to Claim 3. Kalb, Jr. does not disclose a current path to provide a correction current bias or a correction current supply section or using a comparison section within the correction current supply section.

12. Foster discloses a current path to provide a correction current generated by a correction current supply section (Column 6, line 48 – Column 7, line 4). The reference also discloses using a comparator in a comparison section to control the timing and amount of current correction (Column 7, lines 19 – 68).

13. In regards to Claims 4 and 7, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the modified apparatus used for Claim 2, by including a correction current supply section and current path as disclosed by Foster for the purpose of making the output of the Hall-effect sensors further dependant only on changes in the atmosphere by ensuring that the output of the sensor is zero without the presence of a magnetic field.

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14. In regards to Claim 5, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the modified apparatus applied to Claim 4 by including a comparison section in the correction current section for the purpose of controlling the current adjustment.

15. In regards to Claim 6, Foster states that the biasing circuit will work for a voltage source that supplies a voltage within the range of 4.5 V – 24 V, thus implying that the source is separate from the device biasing circuit since it is replaceable.

16. In regards to Claims 8, 9, and 15, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the modified apparatus used for Claim 7 by including a comparison section in the correction current section for the purpose of controlling the current adjustment since Foster discloses using a comparator and resistors coupled to the reference voltage in a comparison section to control the timing and amount of current correction (Column 7, lines 19 – 68).

17. In regards to Claims 10 and 11, Foster discloses, in detail, a comparison circuit that meets all of the limitations recited by the applicant (Column 7, lines 19 – 68), including a buffer amplifier (Column 7, lines 19 – 20).

18. In regards to Claim 12, Foster discloses transistors/switching devices being in the current path (Column 7, lines 19 – 31).

19. In regards to Claim 14, the Kalb, Jr. reference discloses using multiple Hall-sensors. Foster discloses only one, but he discloses using a correction current supply section with a reference voltage source and a comparison section.

20. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the modified invention applied to Claim 7 to include separate reference voltage sources and comparison sections for the purpose of enabling each Hall-sensor to operate independently.

*Allowable Subject Matter*

21. Claims 13 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Response to Arguments*

22. The amendment filed on 3/12/03 under 37 CFR 1.131 has been considered but is ineffective to overcome the Kalb, Jr. reference.

23. The statements regarding the differences between the invention disclosed by Kalb, Jr. and the invention disclosed by the applicant, appear to be accurate; however, the amended claim language of Claims 1 and 17 fail to accurately describe the features that create the differences. While the limitation of "... so that a driving current driving at least one Hall device of the plurality of Hall devices is a current adjusted amount of a driving current driving another Hall device through a corresponding terminal of the plurality of terminals." could be interpreted to describe the constant supplies providing an additional current to each of the Hall devices, as shown in Fig. 1, it could also be easily interpreted to describe the invention of Kalb, Jr. wherein a current adjusted amount could be due to a current drop in the Hall device and the output current then drives the next Hall device.

24. In light of these arguments, the rejections of the original office action stand.

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25. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

26. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.



*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald M Lair whose telephone number is (703) 305-4450. The examiner can normally be reached on Monday - Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (703) 308-0750. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1436.



Donald M Lair  
Patent Examiner  
Art Unit 2858  
March 27, 2003



**N. Le**  
**Supervisory Patent Examiner**  
**Technology Center 2800**